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SOUTHERN CALIFORNIA MARINE SPORT FISHING FROM PRIVATELY OWNED BOATS: CATCH AND EFFORT FOR JULY-SEPTEMBER 1982

by

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SOUTHERN CALIFORNIA MARINE SPORT FISHING FROM PRIVATELY OWNED BOATS: CATCH AND EFFORT FOR JULY-SEPTEMBER 1982 [1]

by

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ABSTRACT

The catch landed and effort expended by private-boat sport fishermen were studied in southern California between July and September 1982, to determine the impact of that segment of the sport fishery on local marine resources. Fishermen returning from fishing trips were interviewed at launch ramps, hoists, and boat-rental facilities. This report contains quantitative data and statistical estimates of total effort, total catch, catch of preferred species, and length frequencies for those species whose catches are regulated by minimum size limits.

An estimated 287 000 organisms were landed by 132 200 anglers and 5 800 divers. The two major components of the catch were Pacific mackerel, *Scomber japonicus* (98 000 landed), and white croaker, *Genyonemus lineatus* (46 000 landed). Together these two species made up over half of the estimated 270 000 fish-angler catch. Basses, *Paralabrax* spp., and rockfishes, *Sebastes* spp., made up 15% and 12% respectively, of the angler catch. Abalone, *Haliotis* spp., and rock scallop, *Hinnites multirugosus*, combined to form over half the diver catch of 16 700 organisms.

Angler compliance with size limits varied greatly depending on the species in question. Compliance was particularly poor for white seabass, *Atractoscion nobilis*; California halibut, *Paralichthys californicus*; California barracuda, *Sphyraena argentea*; and Pacific bonito, *Sarda chiliensis*. The compliance rate for the above group ranged from a high of 70% for California halibut down to 4% for Pacific bonito. The diver size-limit compliance rate for abalone, *Haliotis* spp., was 97%, almost 5% higher than last year's July-September compliance rate.

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INTRODUCTION

Sport fishing activity in southern California marine waters is a source of mortality for both local and migratory fish populations. To determine the extent that recreational fishing activity affects marine fish stocks, the Department of Fish and Game studied one segment of the recreational fishery: fishermen using privately owned, trailerable boats.

The major purposes of the study were to estimate fishing effort levels expended by anglers and divers, to estimate the magnitude and species composition of the catch by these fishermen, and to assess the degree of sport fishermen's compliance with size limit regulations.

The information generated by this study provides: 1) a baseline study for comparison with future catch and effort trends; 2) evidence for adding, deleting, or changing fishing regulations; 3) an indication of fishing pressure on various species; and 4) supportive material for other agencies to use when assessing proposed actions which could affect southern California's living marine resources. The results of the study focus attention on areas in which management decisions may be necessary.

OPERATIONS

Sampling Plan

The sampling plan consisted of a program of random, stratified field sampling at selected launch ramps, hoists, and boat-rental facilities in Santa Barbara, Ventura, Los Angeles, Orange and San Diego counties. Sampling was conducted on all weekends and holidays, and on randomly chosen weekdays in accordance with available manpower. Field samplers remained at the sampling sites from 1000 h to 1800 h, and an attempt was made to interview all

returning anglers and divers. Information on length of angling trip, number of hours spent diving, number of fishing poles used, and number of people angling or diving was gathered along with the identification and enumeration of all fishes, mollusks, and crustaceans in possession. Instances of fishing parties which did not keep their catch were noted, but no attempt was made to identify or quantify those fishes returned to the water. All species posted with minimum size limits were measured for length-frequency analysis.

Sampling Locations

Five counties were covered in the survey: Santa Barbara, Ventura, Los Angeles, Orange and San Diego. Three sampling sites were located in Santa Barbara County, three sites in Ventura County, seven sites in Los Angeles County, six sites in Orange County, and eight sites in San Diego County.

Statistical Analysis

Data were averaged on a daily basis for each county, then expanded to estimate the total catch or effort for each county, each month. Catch estimates were made for each species which had a legal minimum size limit, for the 20 most commonly landed species, for the *Sebastes* genus, and for the total number of fishes landed. Estimates were calculated separately for weekends and weekdays.

RESULTS AND DISCUSSION

Data Samples

During the July 1 - September 30, 1982 quarter, 19 launch ramps, 5 boat hoists, and 4 boat-rental locations were sampled 378 times. Samplers

interviewed 29 941 anglers and 1534 divers who spent 221 783 angler trip hours [3/] and 2202 diver hours [4/] in southern California coastal waters. Samplers examined 58 934 fishes, mollusks, and crustaceans of 137 species in the angler catch, along with 1271 filleted fishes and 83 fishes which could not be identified to species due to time constraints or the incomplete condition in which the fish were landed (Tables 1 and 2). In the sampled diver catch, 4093 organisms of 58 species plus 1 unidentified fish, 80 unidentified filleted fishes, and 211 unidentified invertebrates were examined.

Effort

An estimated 132 200 angler days were expended by southern California sport fishermen between July 1 and September 30, 1982 (Tables 3 and 4). This represented a 23% increase in fishing effort from the previous (April-June, 1982) quarter, and was within one percentage point of matching the angling effort expended during the July-September 1981 quarter. In an established pattern, Los Angeles County was the location of greatest angler effort, nearly 38% in this case, and Santa Barbara/Ventura counties supported the least amount of angler effort, 10%. Both Orange and San Diego counties, as has also been the pattern, had roughly equal shares of angler effort, 23% and 29% respectively. The magnitude and distribution of angling effort seemed to be directly related to the magnitude and distribution of the major coastal metropolitan population centers. The 8100 diver hours expended in southern California represented a 100% increase in diver effort from last quarter (Tables 5 and 6).

3/ The unit of angler effort is 1 h of trip time per angler. Adjustments are made for those using more than one fishing pole concurrently.

4/ The unit of dive effort is 1 h spent underwater.

This doubling of effort seemed to have been distributed fairly equally throughout the five counties surveyed, with improved weather and sea conditions probably accounting for most of the upsurge in diving effort.

Catch

An estimated 270 000 fishes and other organisms were landed by anglers in southern California, and an estimated 16 700 organisms were landed by divers. Thirty-six species of fishes and invertebrates made up 95% of the combined angler/diver catch (Table 2). The remaining 5% of the combined catch was composed of 106 species.

Two species, Pacific mackerel, *Scomber japonicus*, 98 000 landed, and white croaker, *Genyonemus lineatus*, 46 000 landed, made up over half of the angler catch. Of the remaining portion of the catch, 15% was composed of the three *Paralabrax* bass species (kelp bass, *Paralabrax clathratus*, 12 000 landed; spotted sand bass, *P. maculatofasciatus*, 6600 landed; and barred sand bass, *P. nebulifer*, 22 500 landed). Pacific bonito, *Sarda chiliensis*, 13 000 landed, represented 5% of the catch, a substantial decrease from the 82 000 bonito landed during the same quarter last year. Rockfishes, *Sebastes* spp., an estimated 33 200 landed, composed 12% of the angler catch. Of the 38 species of rockfish and other scorpaenids tallied, just seven species made up half the estimated rockfish total; these seven species were sculpin, *Scorpaena guttata*; copper rockfish, *Sebastes caurinus*; greenspotted rockfish, *S. chlorostictus*; vermilion rockfish, *S. miniatus*; blue rockfish, *S. mystinus*; bocaccio, *S. paucispinnis*; and olive rockfish, *S. serranoides*. The combined catch of preferred game species, including white seabass, *Atractoscion nobilis*; yellowtail, *Seriola lalandi*; California barracuda, *Sphyraenea argentea*; and California halibut, *Paralichthys californicus*; totalled 4% of the catch. This was slightly less than the 5% recorded for the

same group of species during the 1981 summer quarter. One of these species, California barracuda, did show a significant (30%) increase in landings over last year's July through September quarter.

Abalone, *Haliotis* spp., and rock scallop, *Hinnites multirugosus*, dominated the diver catch of 16 700 organisms, comprising half of the estimated landings. Red abalone, *Haliotis rufescens*, was the leading catch species, making up 74% of the abalone catch. California sheephead, *Semicossyphus pulcher*, the leading finfish species in the diver catch, made up 19% of the estimated landings. The magnitude of this quarter's diver catch was remarkably similar to last year's third quarter landings (16 700 versus 16 600 for July-September, 1981). The proportional contributions of the major catch species were also similar, with the exception of green abalone, *Haliotis fulgens*; landings of this species declined 57% when compared to the 1981 July-September quarter.

Variation by County

Anglers in Santa Barbara and Ventura counties landed an estimated 39 000 fishes, or 15% of the estimated southern California sport catch total. Half of the catch was composed of rockfishes, *Sebastes* spp., with copper rockfish and blue rockfish being among the predominant species, constituting 35% of the combined rockfish catch (Table 7). Pacific mackerel was the leading catch species, although the 7400 mackerel landed here represented only a small (8%) portion of the entire estimated southern California mackerel catch of 98 000 fish. White croaker, 5960 landed, was a major catch component, comprising 15% of the bi-county landings. White croaker landings in Santa Barbara and Ventura counties did increase nearly 30% over the same period last year. The bulk (95%) of the *Paralabrax* spp. bass catch was made up of kelp bass. The 3700 kelp

bass landed was more than double the previous quarter's (April through June) total, and represented a third of the overall southern California kelp bass landings. California halibut landings, 800 fish, delcined by nearly 30% compared to the July-September, 1981 halibut catch estimates, but showed a moderate (18%) increase over landings recorded during the previous quarter. Divers in Santa Barbara and Ventura counties expended almost twice as much diving effort as they did last quarter and landed 3800 organisms (Table 5), a 37% increase over last quarter. Together, rock scallop and red abalone made up nearly half of the diver catch total. The 1000 rock scallop landed made it the leading catch species, and was more than double last quarter's rock scallop landings in Santa Barbara and Ventura counties.

In Los Angeles County, anglers landed an estimated 117 000 fishes, or 43% of the southern California angler catch. Two-thirds of the Los Angeles County catch was composed of Pacific mackerel, 43 200 landed, and white croaker 29 300 landed. Basses were a significant portion of the catch; the 10 500 barred sand bass and 4500 kelp bass landed represented 13% of the Los Angeles County catch and 36% of the combined southern California bass catch. The Pacific bonito catch of 6800 fish, highest among the five counties, represented a five-fold decrease in bonito landings from a similar period last year. California barracuda landings seemed to exhibit an increasing trend. The nearly 3000 barracuda landed in Los Angeles County almost equalled the entire southern California barracuda catch for the 1981 third quarter. Los Angeles County divers landed 4130 fishes and invertebrates. The leading species in the diver catch was rock scallop, 1300 landed, comprising nearly a third of the diver catch. Abalone landings were, as in recent past years, very infrequent due to the extensive coastal closures prohibiting the sport take of abalone.

Anglers in Orange County landed an estimated 52,200 fishes. Pacific mackerel, 23,600 landed, was the leading species, comprising 45% of the Orange County catch total. White croaker, 8400 landed, and the three *Paralabrax* spp. basses, 8800 landed, were both substantially represented in the catch, and together, made up 33% of the landings. Orange County had the lowest California halibut catch among the five southern California counties (355 halibut). This was in keeping with a pattern established last year and maintained during the previous quarter, when just 330 halibut were caught in Orange County. Orange County divers landed 1800 organisms, 42% of which were rock scallops. Here, as in most of Los Angeles County, coastal closures limited the abalone take to 11% of the catch. California sheephead was the only other major species landed in significant numbers (470 fish) in Orange County; sheephead made up 20% of the Orange County diver catch.

San Diego County anglers caught an estimated 61 500 fishes, or 23% of the southern California private-boat catch. As in the preceeding four counties, Pacific mackerel, 23 400 landed, was the leading catch species. Pacific bonito was the premier catch species in San Diego County at this time last year; this quarter's estimated tally of 3500 bonito represented an 80% drop in landings. All three *Paralabrax* bass species were well represented in San Diego's sport fish catch. Kelp bass, 2200 landed; spotted sand bass, 5000 landed; and barred sand bass, 6200 landed, cumulatively represented 22% of San Diego County's catch total. White croaker, as in the rest of southern California, was an important catch component, although the 2100 white croaker landed represented only 5% of the southern California white

croaker catch. Albacore, *Thunnus alalunga*, were not readily available to most anglers during this quarter, and only an estimated 420 were caught. Most of these albacore (75%) were landed in San Diego County. In contrast, 2400 albacore were landed in San Diego County during last year's July-September quarter. San Diego County had the largest diver catch in southern California, totalling an estimated 6800 organisms. This represented 41% of the southern California diver catch. Abalone was the major catch component, making up almost 60% of the San Diego County diver take. Red abalone was the leading species in the diver catch; the 3300 red abalone represented 84% of the combined abalone landings. Green abalone, 450 landed, were taken in much smaller quantities this year than last, when 1250 were taken between July and September. More California sheephead, 1100 fish, were landed in San Diego County than in any of the other southern California counties. This represented a doubling of sheephead landings in San Diego County from the levels recorded during July through September, 1981.

Length Frequency

Of the seven finfish species for which length-frequency data was analyzed, size limit compliance for white seabass, California halibut, Pacific bonito, and California barracuda ranged from poor to almost non-existent (Table 8, Figures 1-7). The white seabass size-limit compliance rate of 6% was lower than last quarter's 10% and a third of last year's July-September compliance rate of 18%. An examination of the length frequency histogram (Figure 1) for white seabass shows that the bulk of undersized fish were well below the 71 cm (28 in.) minimum size limit. This indicated that most fishermen were either unable to identify juvenile and sub-adult white seabass or that they were simply unaware of the existing white seabass size limit. In either case, an intensified program of

angler education might improve angler size limit compliance. The poor 4% compliance rate for Pacific bonito partly reflected the fact that the regulations imposing a bonito size limit were just 5 months old, and that a five-fish-per-angler, June 15 through October, tolerance was a provision of the new regulations. The bonito length frequency histogram (Figure 4) indicates that most of the bonito measured fell within modal groups well below the 24 in. fork length minimum size limit. Legal size fish were apparently not available to the fishery during this quarter except on a very limited basis. The 70% compliance rate for California halibut and the 57% compliance rate for California barracuda were similar to rates noted for these two species last quarter. The size limit regulations for halibut and barracuda, two readily identifiable species, were familiar to most anglers, and the poor size-limit compliance rate could be attributed to a reluctance to release "short" or under-sized fish, coupled with the large proportion of under-sized fish present within the local halibut and barracuda stocks during this time period. Size limit compliance for the three *Paralabrax* bass species averaged 90%, the same level recorded during the previous (April through June) quarter (Figures 1-3). This level of compliance was a 4% improvement over the 86% compliance rate noted for the basses during the same time period last year. The combined size-limit compliance rate for abalone was 97%, 5% higher than last year (Figures 8 and 9).

REFERENCES

Racine, Denyse. 1982. Southern California marine sport fishing from privately-owned boats: catch and effort for July-September 1981. **Calif.** Dept. Fish and Game, Mar. Res. Admin. Rept., 82-3:1-28.

Racine, Denyse. 1983. Southern California marine sport fishing from privately owned boats: catch and effort for April-June 1982. **Calif.** Dept. Fish and Game, Mar. Res. Admin. Rept., 83-2:1-30.

TABLE 1. List of Species Sampled from Southern California Private Boats; July through September 1982.

Scientific name	Common name	No. sampled
	Fishes	
Albula vulpes	bonefish	10
Alopias vulpinus	common thresher	13
Amphisticus argenteus	barred surfperch	61
Anisotremus davidsonii	sargo	46
Anoplopoma fimbria	sablefish	52
Atherinops affinis	topsmelt	1
Atherinopsis californiensis	jacksmelt	61
Atractoscion nobilis	white seabass	257
Balistes polylepis	finescale triggerfish	6
Caulolatilus princeps	ocean whitefish	291
Cheilotrema saturnum	black croaker	44
Chromis punctipinnis	blacksmith	16
Citharichthys sordidus	Pacific sanddab	546
C. stigmaeus	speckled sanddab	3
C. xanthostigma	longfin sanddab	3
Cypselurus californicus	California flyingfish	6
Damalichthys vacca	pile surfperch	54
Embiotica jacksoni	black surfperch	268
E. lateralis	striped surfperch	13
Eopsetta jordani	petrale sole	6
Etrumeus teres	round herring	1
Galeorhinus zyopterus	soupfin shark	11
Genyonemus lineatus	white croaker	10 192
Girella nigricans	opaleye	443
Glyptocephalus zachirus	rex sole	1
Halichoeres semicinctus	rock wrasse	30
Heterodontus francisci	horn shark	3
Heterostichus rostratus	giant kelpfish	34
Hexagrammus decagrammus	kelp greenling	6
Hippoglossina stomata	bigmouth sole	16
Hydrolagus colliei	ratfish	5
Hyperprosopon argenteum	walleye surfperch	26
Hysopsetta guttulata	diamond turbot	28
Hypsurus caryi	rainbow surfperch	11
Hypsypops rubicundus	garibaldi	2
Isurus oxyrinchus	bonito shark	129
Lepidopsetta bilineata	rock sole	4
Leuresthes tenuis	California grunion	1
Medialuna californiensis	halfmoon	536
Menticirrhus undulatus	California corbina	2
Merluccius productus	Pacific hake	44
Microstomus pacificus	Dover sole	1
Mustelus californicus	gray smoothhound	116
M. henlei	brown smoothhound	40
Myliobatis californica	bat ray	35

Table 1 - cont'd.

Scientific name	Common name	No. sampled
Oncorhynchus kisutch	silver salmon	1
O. tshawytscha	king salmon	16
Ophiodon elongatus	lingcod	41
Oxyjulis californica	senorita	61
Paralabrax clathratus	kelp bass	2991
P. maculatofasciatus	spotted sand bass	1318
P. nebulifer	barred sand bass	5401
Paralichthys californicus	California halibut	729
Phanerodon furcatus	white surfperch	40
Platyrhinoidis triseriata	thornback	6
Pleuronichthys coenosus	C O turbot	1
P. ritteri	spotted turbot	3
Porichthys myriaster	specklefin midshipman	1
P. notatus	plainfin midshipman	1
Prionace glauca	blue shark	81
Raja binoculata	big skate	1
R. inornata	California skate	2
Rhacochilus toxotes	rubberlip surfperch	74
Rhinobatos productus	shovelnose guitarfish	148
Roccus saxatilis	striped bass	1
Roncador stearnsii	spotfin croaker	5
Sarda chiliensis	Pacific bonito	2832
Sardinops sagax caeruleus	Pacific sardine	1
Scomber japonicus	Pacific mackerel	21 873
Scorpaena guttata	sculpin	1128
Scorpaenichthys marmoratus	cabezon	148
Sebastes atrovirens	kelp rockfish	184
S. auriculatus	brown rockfish	391
S. carnatus	gopher rockfish	122
S. caurinus	copper rockfish	807
S. chlorostictus	greenspotted rockfish	493
S. chrysomelas	black and yellow rockfish	35
S. constellatus	starry rockfish	356
S. dallii	calico rockfish	6
S. diploproa	splitnose rockfish	13
S. elongatus	greenstriped rockfish	124
S. ensifer	swordspine rockfish	3
S. entomelas	widow rockfish	73
S. eos	pink rockfish	1
S. flavidus	yellowtail rockfish	13
S. gilli	bronzespotted rockfish	2
S. goodei	chilipepper	112
S. hopkinsi	squarespot rockfish	21
S. lentiginosus	freckled rockfish	2
S. levis	cowcod	29
S. melanostomus	blackgill rockfish	1
S. miniatus	vermilion rockfish	438

Table 1 - cont'd.

Scientific name	Common name	No. sampled
Sebastes mystinus	blue rockfish	878
S. ovalis	speckled rockfish	115
S. paucispinis	bocaccio	7
S. pinniger	canary rockfish	14
S. rastrelliger	grass rockfish	440
S. rosaceus	rosy rockfish	176
S. rosenblatti	greenblotched rockfish	12
S. ruberrimus	yelloweye rockfish	6
S. rubrivinctus	flag rockfish	105
S. rufus	bank rockfish	8
S. semicinctus	halfbanded rockfish	11
S. serranoides	olive rockfish	574
S. serriceps	treefish	136
S. umbrosus	honeycomb rockfish	115
S. zacentrus	sharpchin rockfish	7
Sebastolobus alascanus	shortspine thornyhead	1
Semicossyphus pulcher	California sheephead	938
Seriola lalandi	yellowtail	186
Seriphus politus	queenfish	348
Sphyraena argentea	California barracuda	930
Sphyrna zygaena	smooth hammerhead	7
Squalus acanthias	spiny dogfish	136
Squatina californica	Pacific angel shark	5
Stereolepis gigas	giant sea bass	6
Strongylura exilis	California needlefish	23
Synodus lucioceps	California lizardfish	145
Tetrapturus audax	striped marlin	2
Thunnus alalunga	albacore	120
T. albacares	yellowfin tuna	2
T. obesus	bigeye tuna	3
T. thynnus	bluefin tuna	3
Trachurus symmetricus	jack mackerel	97
Triakis semifasciata	leopard shark	15
Umbrina roncador	yellowfin croaker	395
Urolophus halleri	round stingray	3
Xystreurys liolepis	fantail sole	6
Zapteryx exasperata	banded guitarfish	1
-	unidentified fish	49
-	unidentified filleted fish	930
Sebastes spp.	unidentified rockfish	12
" " "	unidentified rockfish fillets	425

Table 1 - cont'd.

Scientific name	Common name	No. sampled
	Mollusks and Crustaceans	
Cancer antennarius	rock crab	29
C. anthonyi	yellow crab	2
C. productus	red crab	33
Cypraea spadicea	chestnut cowry	3
Haliotis corrugata	pink abalone	130
H. cracherodii	black abalone	38
H. fulgens	green abalone	212
H. rufenscens	red abalone	1028
H. sorenseni	white abalone	22
Hinnites multirugosus	rock scallop	1047
Kelletia kelletia	Kellet's whelk	3
Loxorhynchus grandis	sheep crab	10
Panulirus interruptus	California spiny lobster	1
Tivela stultorum	pismo clam	11
Mytilus spp.	mussel	395
Octopus spp.	unidentified octopus	10
Majidae	unidentified spider crab	14
Brachyura	unidentified crab	13
Mollusca	unidentified mollusk	178
	Echinoderms	
Strongylocentrotus franciscanus	red urchin	67
S. purpuratus	purple urchin	2
Pisaster spp.	sea star	9

TABLE 2. Most Commonly Landed Species; July through September 1982.

Scientific name	Common name	No. sampled
	Fishes	
Scomber japonicus	Pacific mackerel	21 873
Genyonemus lineatus	white croaker	10 192
Paralabrax nebulifer	barred sand bass	5401
P. clathratus	kelp bass	2991
Sarda chiliensis	Pacific bonito	2832
Paralabrax maculatofasciatus	spotted sand bass	1318
Scorpaena guttata	sculpin	1128
Semicossyphus pulcher	California sheephead	938
Sphyraena argentea	California barracuda	930
Sebastes mystinus	blue rockfish	878
S. caurinus	copper rockfish	807
Paralichthys californicus	California halibut	729
Sebastes serranoides	olive rockfish	574
Citharichthys sordidus	Pacific sanddab	546
Medialuna californiensis	halfmoon	536
Sebastes chlorostictus	greenspotted rockfish	493
Girella nigricans	opaleye	443
Sebastes rastrelliger	grass rockfish	440
S. miniatus	vermilion rockfish	438
S. paucispinis	bocaccio	427
Umbrina roncador	yellowfin croaker	395
Sebastes auriculatus	brown rockfish	391
S. constellatus	starry rockfish	356
Seriphus politus	queenfish	348
Caulolatilus princeps	ocean whitefish	291
Embiotoca jacksoni	black surfperch	268
Atractoscion nobilis	white seabass	257
Seriola lalandi	yellowtail	186
Sebastes atrovirens	kelp rockfish	184
S. rosaceus	rosy rockfish	176
Rhinobatos productus	shovelnose guitarfish	148
Synodus lucioceps	California lizardfish	145
	Mollusks	
Hinnites multirugosus	rock scallop	1047
Haliotis rufescens	red abalone	1028
H. fulgens	green abalone	212
H. corrugata	pink abalone	130

TABLE 3. Catch and Effort Estimates for Anglers; July through September 1982.

	Santa Barbara/ Ventura Counties	Los Angeles County	Orange County	San Diego County	Total
Angler parties					
weekend	3348	11 666	7732	8273	31 019
weekday	1780	7468	4137	7328	20 713
total	5128	19 134	11 869	15 601	51 732
Angler days					
weekend	9168	32 092	20 548	21 286	83 094
weekday	4400	17 650	10 115	16 926	49 091
total	13 568	49 742	30 663	38 212	132 185
Angler-trip-hours					
weekend	55 618	224 946	140 070	178 870	599 504
weekday	92 346	114 828	63 311	116 903	387 388
total	147 964	339 774	203 381	295 773	986 892
Total fishes landed					
weekend	26 979	72 820	32 248	35 603	167 650
weekday	12 035	44 586	19 897	25 895	102 413
total	39 014	117 406	52 145	61 498	270 063
No. rockfishes landed					
weekend	10 791	5313	873	4184	21 161
weekday	4995	2060	867	4090	12 012
total	15 786	7373	1740	8274	33 173
Atractoscion nobilis (white seabass)	30	344	587	305	1266
Caulolatilus princeps (ocean whitefish)	142	172	49	881	1244
Citharichthys sordidus (Pacific sanddab)	1382	229	293	571	2475
Embiotoca jacksoni (black surfperch)	98	490	163	62	813
Genyonemus lineatus (white croaker)	5960	29 318	8404	2131	45 813

Table 3 - cont'd.

	Santa Barbara/ Ventura Counties	Los Angeles County	Orange County	San Diego County	Total
Girella nigricans (opaleye)	239	1517	180	46	1982
Medialuna californiensis (halfmoon)	138	1938	288	230	2594
Oncorhynchus tshawytscha (king salmon)	51	4	0	0	55
Ophiodon elongatus (lingcod)	107	24	0	11	142
Paralabrax clathratus (kelp bass)	3664	4516	1786	2213	12 179
P. maculatofasciatus (spotted sand bass)	6	114	1386	5090	6596
P. nebulifer (barred sand bass)	204	10 540	5622	6154	22 520
Paralichthys californicus (California halibut)	810	1379	355	905	3449
Sarda chiliensis (Pacific bonito)	198	6752	2559	3470	12 979
Scomber japonicus (Pacific mackerel)	7425	43 233	23 582	23 357	97 597
Scorpaena guttata (sculpin)	553	2572	543	932	4600
Sebastes atrovirens (kelp rockfish)	192	157	8	298	655
S. auriculatus (brown rockfish)	1267	299	35	345	1946
S. caurinus (copper rockfish)	2759	93	8	147	3007
S. chlorostictus (greenspotted rockfish)	1052	357	125	989	2523
S. goodei (chilipepper)	201	120	65	121	507

Table 3 - cont'd.

	Santa Barbara/ Ventura Counties	Los Angeles County	Orange County	San Diego County	Total
Sebastes miniatus (vermilion rockfish)	864	370	16	952	2202
S. mystinus (blue rockfish)	2765	191	3	330	3289
S. paucispinus (bocaccio)	649	617	403	475	2144
S. rastrelliger (grass rockfish)	808	755	96	155	1814
S. serranoides (olive rockfish)	1148	759	59	640	2606
Semicossyphus pulcher (California sheephead)	368	432	209	518	1527
Seriola lalandi (yellowtail)	0	505	10	370	885
Seriphus politus (queenfish)	87	1079	537	218	1921
Sphyraena argentea (California barracuda)	41	2922	723	585	4271
Thunnus alalunga (albacore)	0	8	93	319	420
Trachurus symmetricus (jack mackerel)	132	61	6	208	407

TABLE 4. Standard Error of the Estimates for Anglers; July through September 1982.

	Santa Barbara/ Ventura Counties	Los Angeles County	Orange County	San Diego County	Total
Angler parties	335	1043	711	1528	2010
Angler days	920	2774	1858	3718	5081
Angler-trip-hours	66 002	20 470	12 486	32 164	77 238
Total fishes landed	3122	8438	4478	6107	11 760
No. rockfishes landed	1781	758	506	1444	2468
albacore	0	4	66	166	178
barred sand bass	44	2369	1598	981	2970
black surfperch	61	147	63	45	177
blue rockfish	433	50	2	119	452
bocaccio	146	157	331	154	424
brown rockfish	427	64	10	151	457
California barracuda	14	570	139	119	599
California halibut	141	193	47	191	310
California sheephead	207	165	43	96	285
chilipepper	110	47	45	59	141
copper rockfish	458	28	5	34	460
grass rockfish	134	191	24	40	238
greenspotted rockfish	350	117	47	539	654
halfmoon	57	459	63	156	492
jack mackerel	61	20	3	95	114
kelp bass	489	513	260	323	821
kelp rockfish	42	67	3	70	105
king salmon	31	3	0	0	31
lingcod	28	12	0	6	31
ocean whitefish	36	80	26	194	215
olive rockfish	200	220	22	190	354
opaleye	107	648	67	31	661
Pacific bonito	65	875	408	569	1123
Pacific mackerel	955	3908	2412	3188	5671
Pacific sanddab	359	88	172	195	452
queenfish	36	427	337	73	550
sculpin	155	396	109	169	471
spotted sand bass	3	32	274	971	1010
vermilion rockfish	132	122	7	280	333
white croaker	1189	3454	1312	433	3906
white seabass	10	58	124	85	161
yellowtail	0	114	4	137	178

TABLE 5. Catch and Effort Estimates for Divers; July through September 1982.

	Santa Barbara/ Ventura County	Los Angeles County	Orange County	San Diego County	Total
Diver parties					
weekend	357	385	282	839	1863
weekday	115	87	119	296	617
total	472	472	401	1135	2480
Diver days					
weekend	921	913	692	2114	4640
weekday	229	130	205	595	1159
total	1150	1043	897	2709	5799
Diver-hours					
weekend	1483	1856	914	2497	6750
weekday	349	105	282	607	1343
total	1832	1961	1196	3104	8093
No. organisms landed					
weekend	2853	3675	1458	5357	13 343
weekday	973	441	439	1458	3311
total	3826	4116	1897	6815	16 654
Haliotis corrugata (pink abalone)	291	54	18	110	473
H. cracherodii (black abalone)	51	4	20	36	111
H. fulgens (green abalone)	12	219	185	453	869
H. rufescens (red abalone)	844	36	0	3295	4175
Hinnites multirugosus (rock scallop)	1026	1277	800	540	3643
Panulirus interruptus (California spiny lobster)	0	0	0	0	0
Paralabrax clathratus (kelp bass)	256	306	71	204	837
Semicossyphus pulcher (California sheephead)	348	395	469	1102	2314

TABLE 6. Standard Error of the Estimates for Divers; July through September 1982.

	Santa Barbara/ Ventura Counties	Los Angeles County	Orange County	San Diego County	Total
Diver parties	50	56	55	168	192
Diver days	111	120	108	412	456
Diver-hours	188	438	204	508	726
No. organisms landed	545	817	294	989	1424
black abalone	23	3	12	21	34
California sheephead	92	88	96	224	275
California spiny lobster	0	0	0	0	0
green abalone	5	83	37	147	173
kelp bass	77	92	30	76	145
pink abalone	82	22	9	33	91
red abalone	194	18	0	517	552
rock scallop	234	277	226	133	448

TABLE 7. Ten Most Commonly Landed Species in Each County; July through September 1982.

County	Rank	Scientific name	Common name
Santa Barbara/ Ventura	1.	*Scomber japonicus*	Pacific mackerel
	2.	*Genyonemus lineatus*	white croaker
	3.	*Paralabrax clathratus*	kelp bass
	4.	*Sebastes mystinus*	blue rockfish
	5.	*S. caurinus*	copper rockfish
	6.	*S. serranoides*	olive rockfish
	7.	*Hinnites multirugosus*	rock scallop
	8.	*Citharichthys sordidus*	Pacific sanddab
	9.	*Sebastes auriculatus*	brown rockfish
	10.	*S. miniatus*	vermilion rockfish
Los Angeles	1.	*Scomber japonicus*	Pacific mackerel
	2.	*Genyonemus lineatus*	white croaker
	3.	*Paralabrax nebulifer*	barred sand bass
	4.	*Sarda chiliensis*	Pacific bonito
	5.	*Paralabrax clathratus*	kelp bass
	6.	*Scorpaena guttata*	sculpin
	7.	*Sphyraèna argentea*	California barracuda
	8.	*Medialuna californiensis*	halfmoon
	9.	*Hinnites multirugosus*	rock scallop
	10.	*Paralichthys californicus*	California halibut
Orange	1.	*Scomber japonicus*	Pacific mackerel
	2.	*Genyonemus lineatus*	white croaker
	3.	*Paralabrax nebulifer*	barred sand bass
	4.	*Sarda chiliensis*	Pacific bonito
	5.	*Paralabrax clathratus*	kelp bass
	6.	*P. maculatofasciatus*	spotted sand bass
	7.	*Hinnites multirugosus*	rock scallop
	8.	*Sphyraena argentea*	California barracuda
	9.	*Semicossyphus pulcher*	California sheephead
	10.	*Umbrina roncador*	yellowfin croaker
San Diego	1.	*Scomber japonicus*	Pacific mackerel
	2.	*Paralabrax nebulifer*	barred sand bass
	3.	*P. maculatofasciatus*	spotted sand bass
	4.	*Haliotis rufescens*	red abalone
	5.	*Sarda chiliensis*	Pacific bonito
	6.	*Paralabrax clathratus*	kelp bass
	7.	*Genyonemus lineatus*	white croaker
	8.	*Semicossyphus pulcher*	California sheephead
	9.	*Caulolatilus princeps*	ocean whitefish
	10.	*Umbrina roncador*	yellowfin croaker

TABLE 8. Occurrence of Sublegal-Size Fishes in Examined Catches; July through September 1982.

Scientific name	Common name	No. examined	Percent legal
	Fishes		
Atractoscion nobilis	white seabass	223	6
Paralabrax clathratus	kelp bass	2245	91
P. maculatofasciatus	spotted sand bass	914	88
P. nebulifer	barred sand bass	3293	91
Paralichthys californicus	California halibut	678	70
Sarda chiliensis	Pacific bonito	1647	4
Sphyraena argentea	California barracuda	619	57
	Mollusks		
Haliotis fulgens	green abalone	186	99
H. rufescens	red abalone	876	94

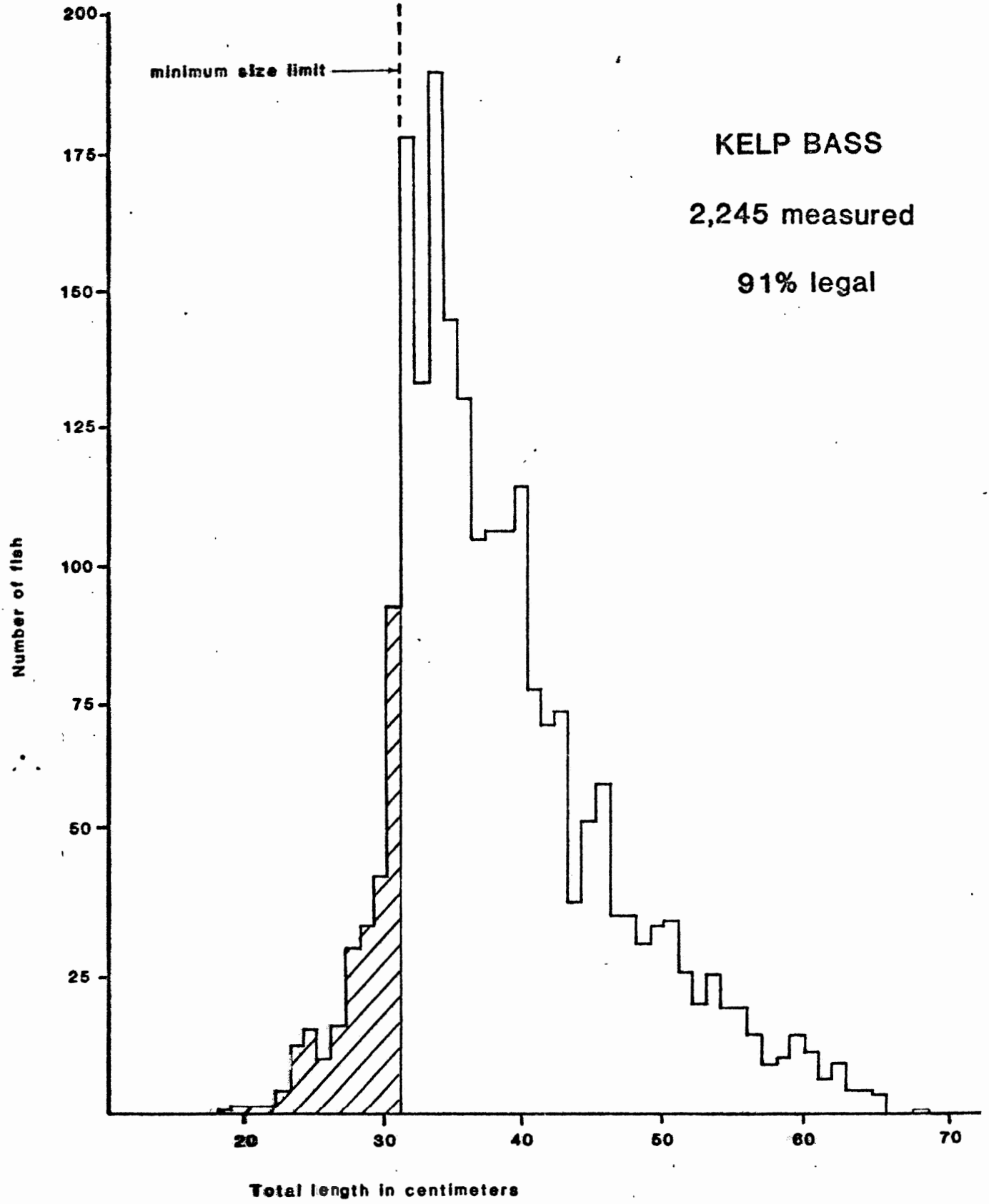

FIGURE 1. Length frequency of kelp bass.

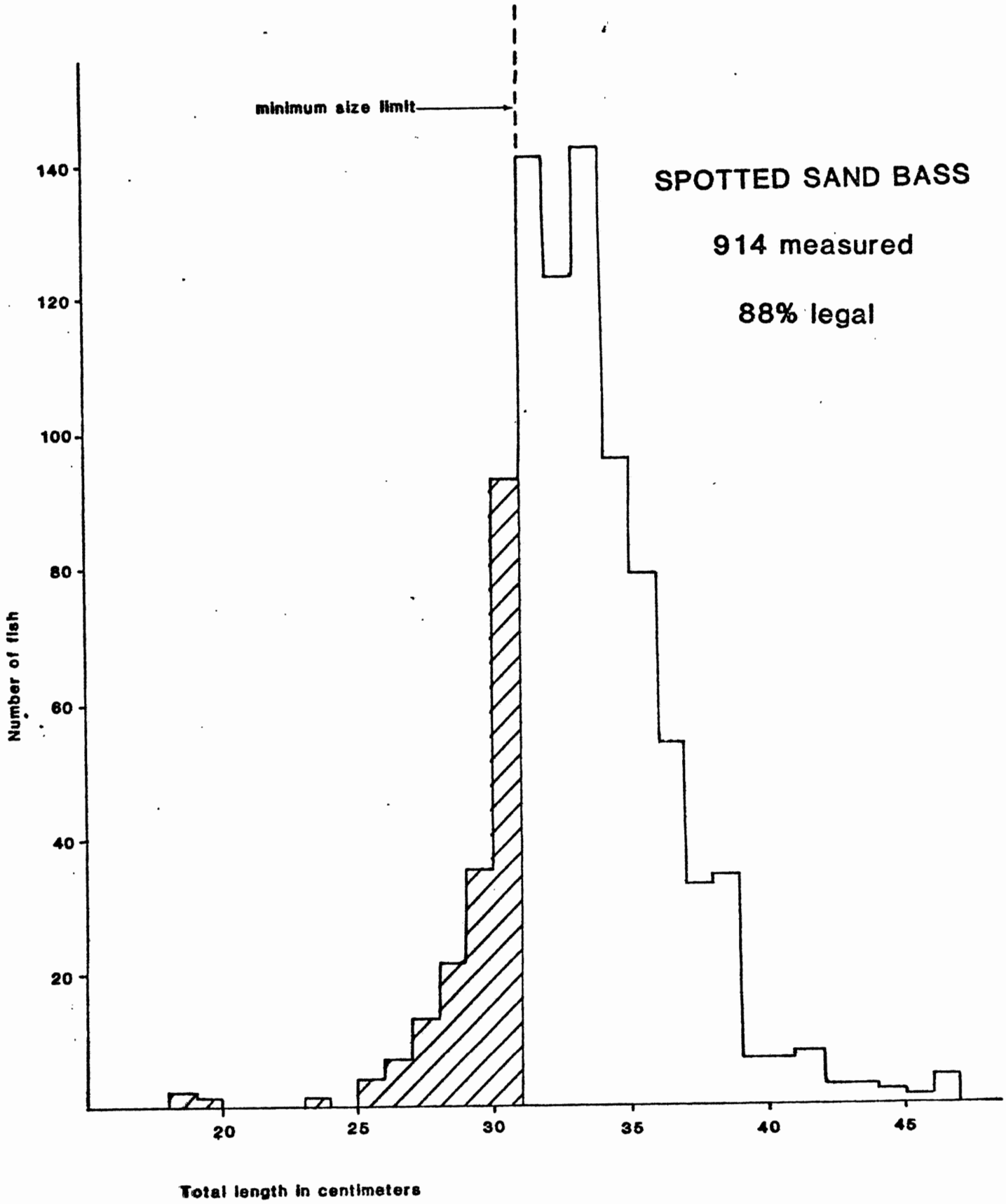

FIGURE 2. Length frequency of spotted sand bass.

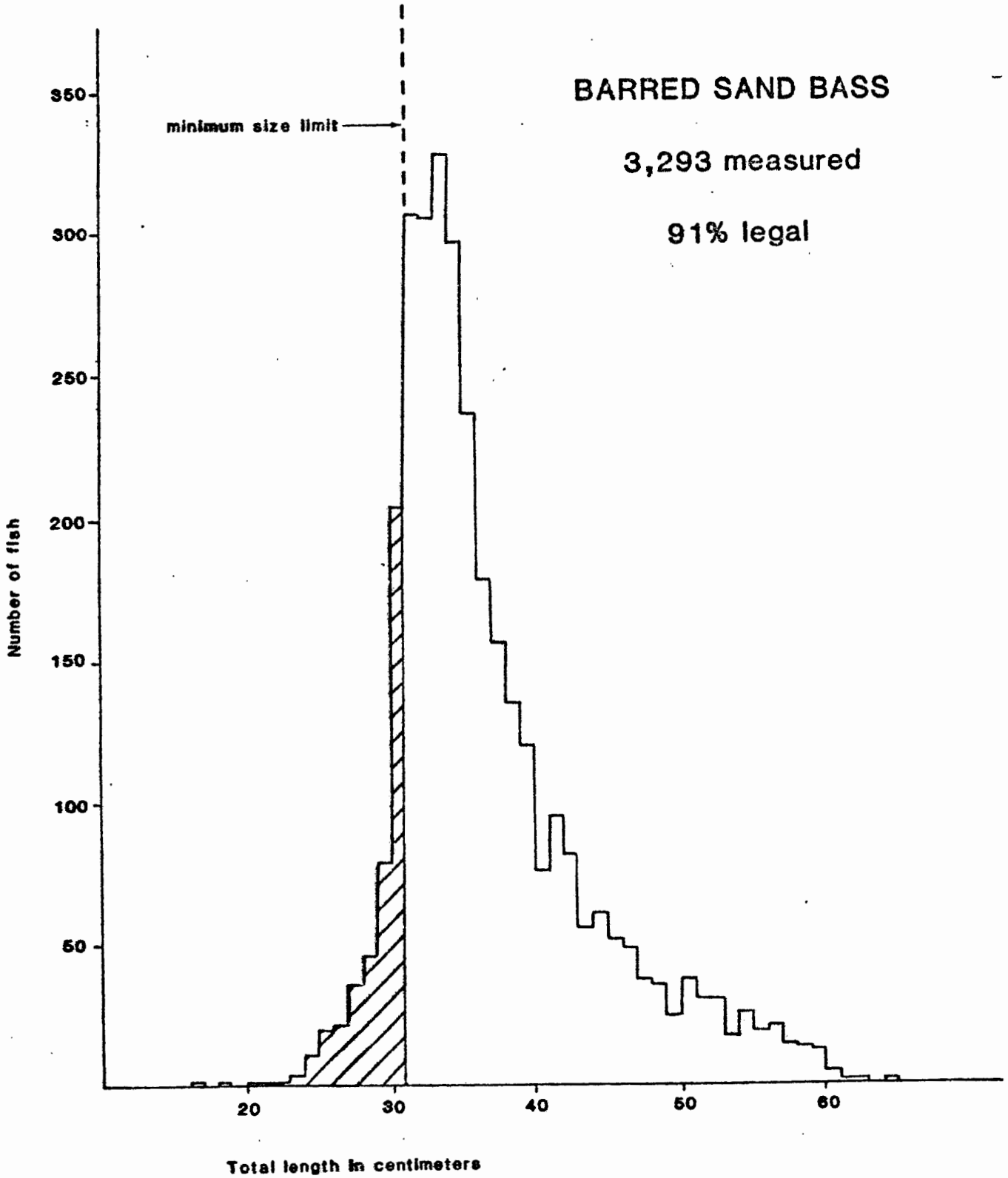

FIGURE 3. Length frequency of barred sand bass.

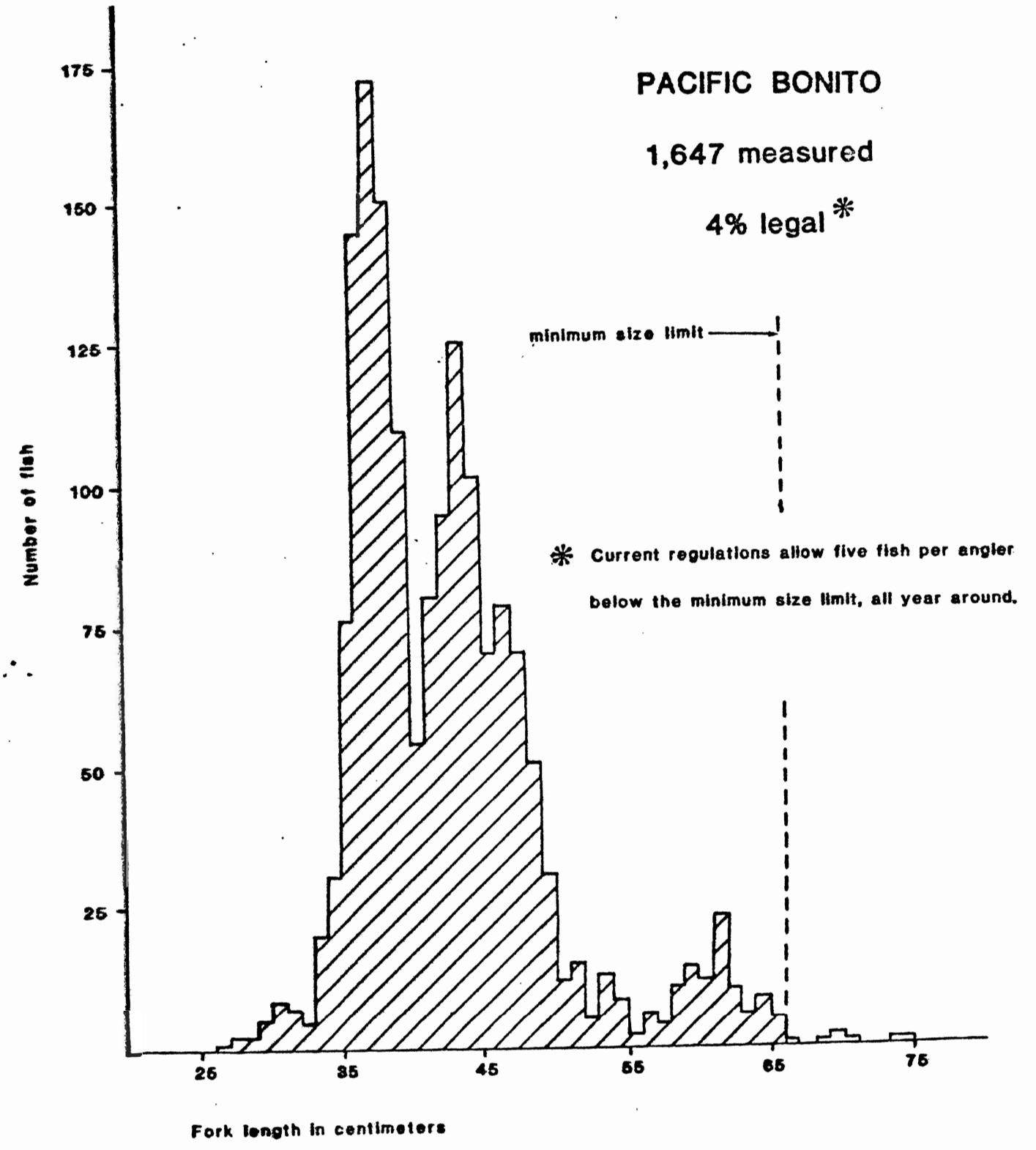

FIGURE 4. Length frequency of Pacific bonito.

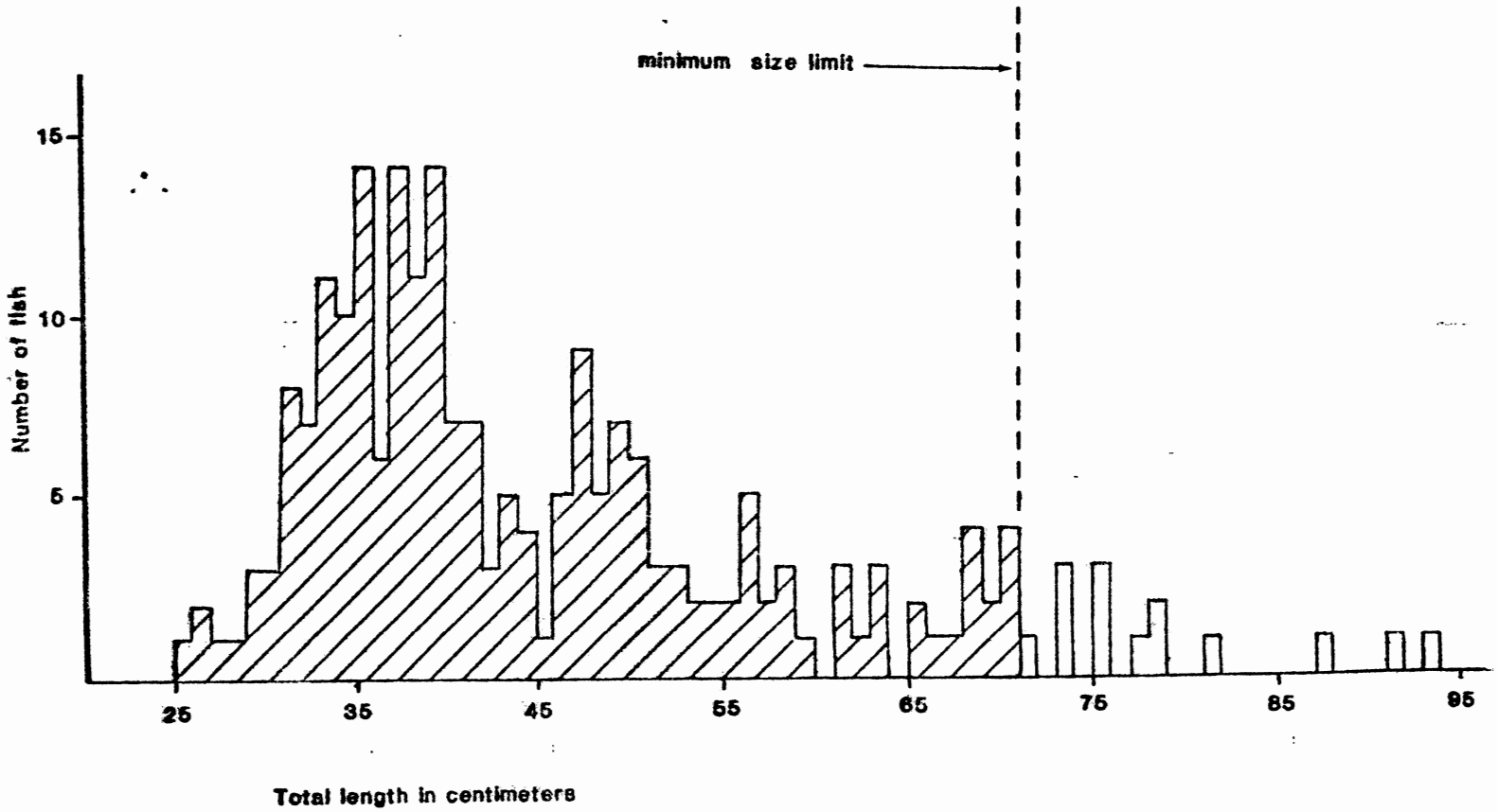

FIGURE 5. Length frequency of white seabass.

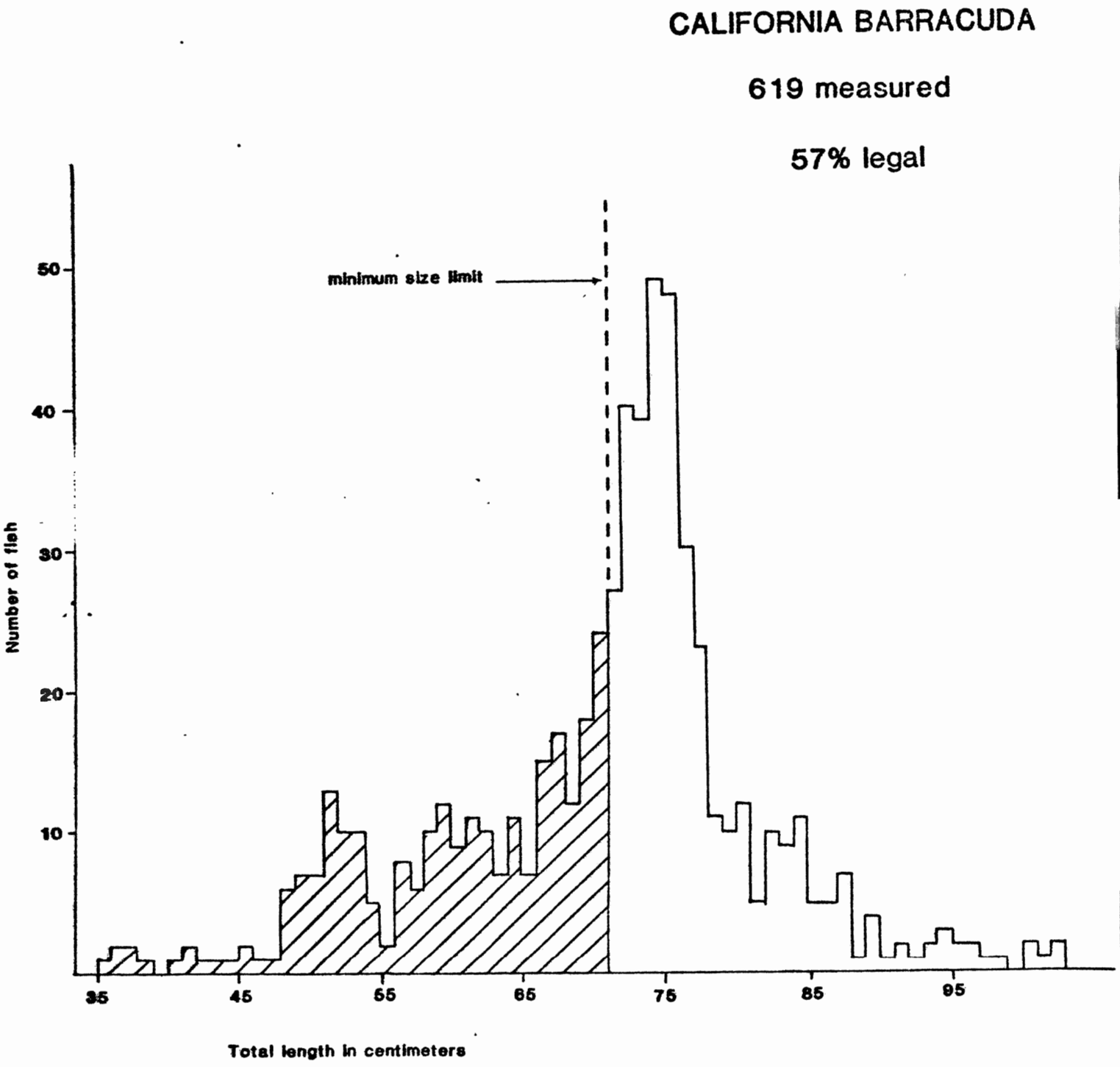

FIGURE 6. Length frequency of California barracuda.

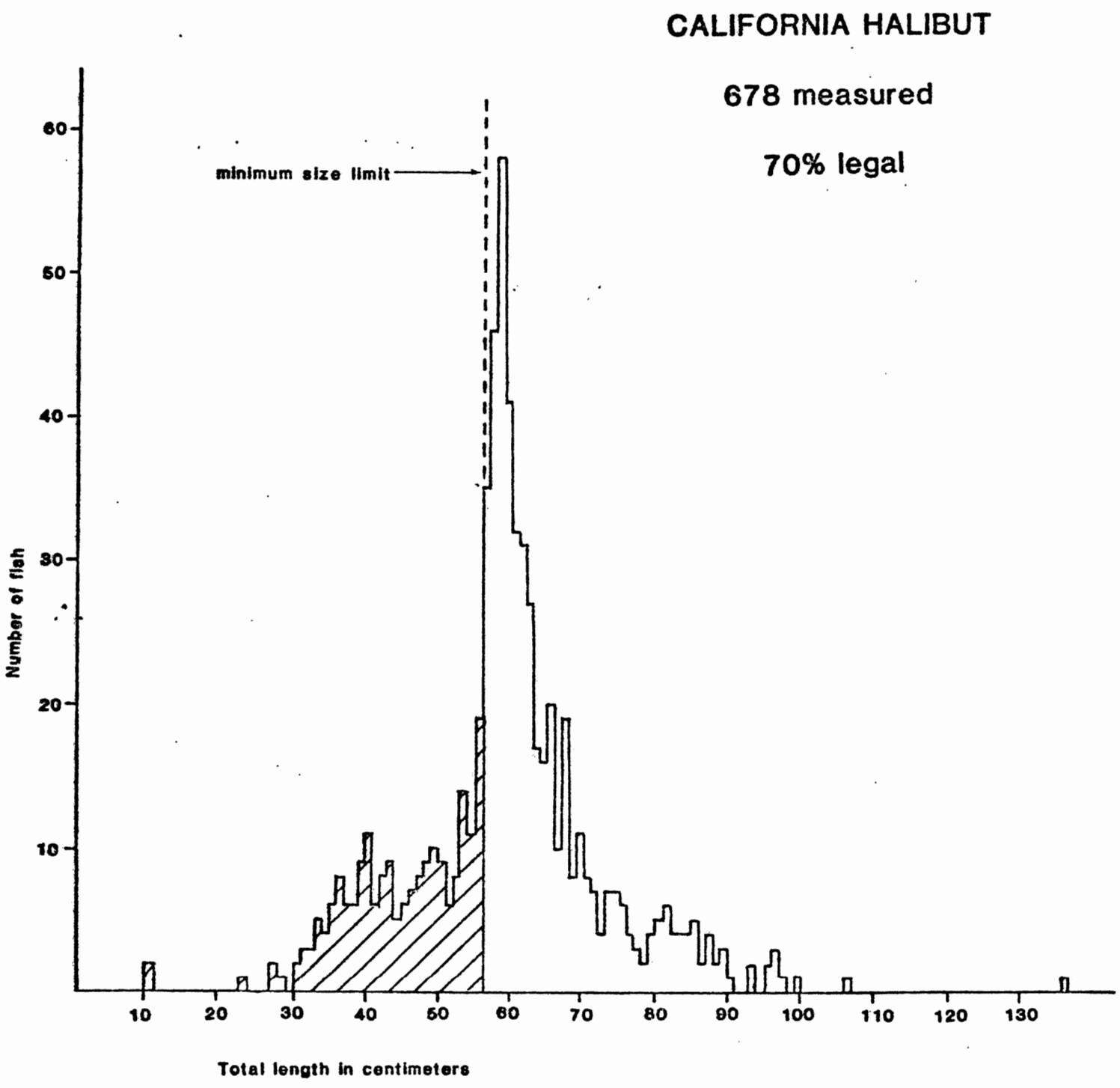

FIGURE 7. Length frequency of California halibut.

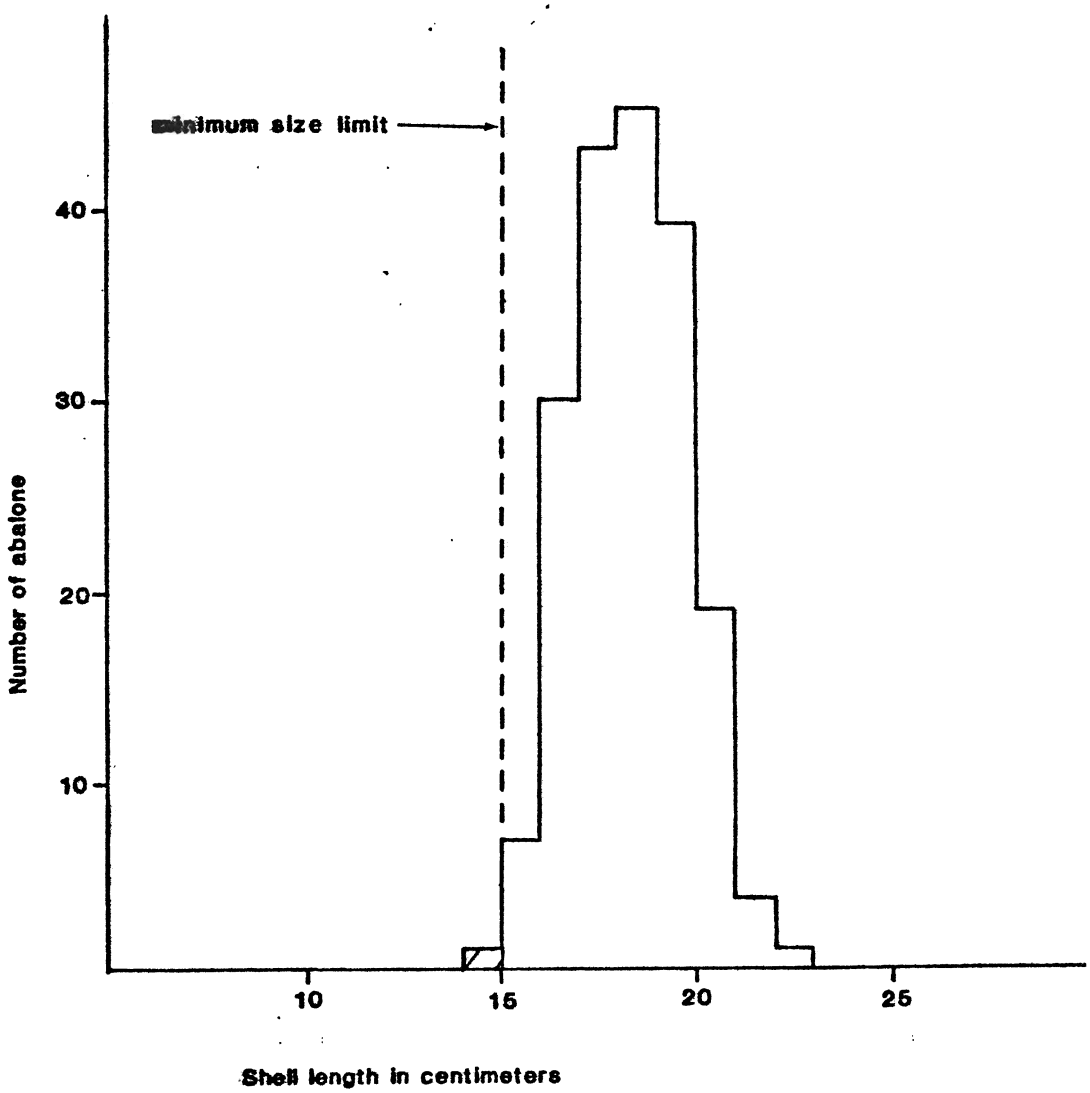

FIGURE 8. Length frequency of green abalone.

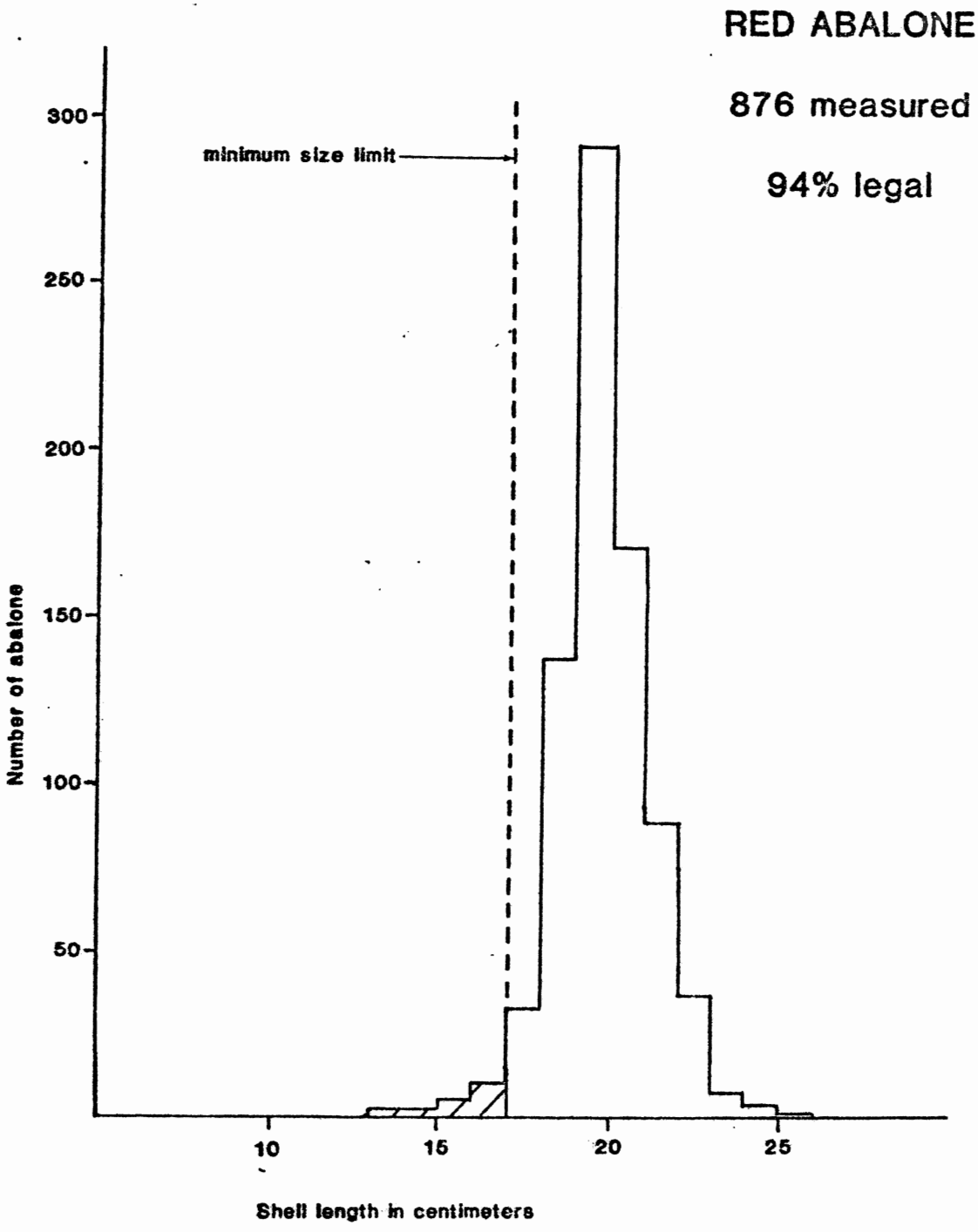

FIGURE 9. Length frequency of red abalone.